

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

IMPINJ, INC.,
Plaintiff,
vs.
NXP USA, INC.
Defendant.

CASE NO. 4:19-cv-3161-YGR

CLAIM CONSTRUCTION ORDER

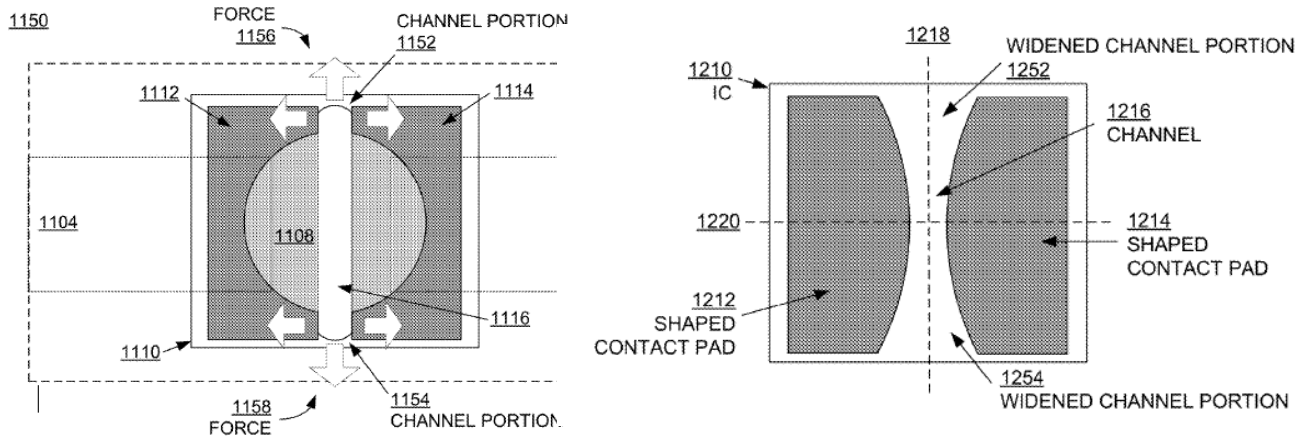
Re: Dkt. No. 77

Plaintiff Impinj, Inc. (“Impinj”) brings this patent infringement action against defendant NXP USA, Inc. (“NXP”), alleging that NXP infringes, *inter alia*, U.S. Patent Nos. 9,633,302 (the “’302 Patent”) and 9,495,631 (the “’631 Patent”). Now before the Court are the parties’ claim construction disputes.

Having carefully considered the papers submitted, the parties’ arguments presented at the claim construction hearing on July 23, 2021, and the pleadings in this action, and for the reasons set forth below, the Court hereby adopts the constructions set forth herein.

I. BACKGROUND

The ’302 and ’631 Patents are both directed to radio-frequency identification (“RFID”) tags. (*See, e.g.*, ’302 Patent at Abstract.) The ’302 Patent relates to improved shape for RFID tag attachment. (*Id.*) In prior art RFID tags, an integrated circuit (“IC”) is attached to an inlay using an adhesive placed between two “contact islands,” which are shown below. (*Id.* at 15:61-16:61.) The adhesive, however, may exert force and propagate unevenly during attachment, which may create misalignment between the IC and the substrate. (*Id.* at 16:21-54.) To deal with this issue, the ’302 Patent proposes an improved channel configuration, also shown below. (*Id.* at 16:65-67.)



(*Id.* at Fig. 11 (prior art channel configuration), Fig. 12 (claimed channel configuration).)

As shown above, the claimed channel “has a relatively narrow portion near the center of channel” and “relatively widened channel . . . near the ends of the channel.” (*Id.* at 17:3-10.) The channel is “substantially symmetric about one or more planes.” (*Id.* at 17:17-24.) This channel shape “may facilitate the flow of the fluid adhesive from the center out to the ends of channel 1216 by decreasing the velocity of the propagating adhesive . . . within the widened channel portions.” (*Id.* at 17:26-34.) This “may reduce the overall force exerted by the adhesive” and “thereby reduc[e] the likelihood and magnitude of . . . misalignment.” (*Id.* at 17:34-40.)

Claim 1 of the '302 Patent recites:

A Radio Frequency Identification (RFID) *integrated circuit* (IC) comprising:

an IC *substrate*;

a *first antenna contact* disposed on, and confined within a perimeter of, a surface of the IC substrate; and

a *second antenna contact* disposed on, and confined within the perimeter of, the surface of the IC substrate; wherein:

the first and second antenna contacts are *separated by a channel* having a first end, a second end opposite the first end, and a center between the first end and the second end;

the *channel spans a majority of a width* of the IC substrate;

a first transverse channel cross-section at *the first end* is *substantially the same size as* a second transverse channel cross-section at *the second end*

and *substantially larger than* a third transverse channel cross-section at *the center*; and

the channel is *shaped to facilitate a fluid flow* from the center to the first and second ends.

The '631 Patent relates to manufacturing methods for forming contact pads. ('631 Patent at Abstract.) Rather than using an adhesive, the '631 Patent contemplates “mounting” the RFID IC unto the inlay by pressing them together. (*Id.* at 7:42-55.) The mounting force may “vary from tag to tag,” which also “affect[s] the electrical properties and performance of the completed tag.” (*Id.* at 7:48-51.) Thus, the '631 Patent proposes to form a “nonconductive repassivation layer” on the RFID tag to “mitigate[] parasitic capacitance variations . . . by ensuring a fixed distance between these circuits and the contact pads.” (*Id.* at 8:10-21.)

This takes place in four steps. First, the IC is fabricated on the wafer. (*Id.* at 16:43-46.) Second, a repassivation layer is deposited on the wafer. (*Id.* at 16:46-50.) Third, a “conductive redistribution layer” is deposited on the repassivation layer and patterned to form contact pads. (*Id.* at 16:47-53.) Fourth, a masking layer is applied to the wafer and patterned. (*Id.* at 16:54-56.) Fifth, the wafer is etched. (*Id.* at 16:58-60.) Finally, a stripping process removes the masking layer and any portion of the repassivation layer not protected by the conductive repassivation layer. (*Id.* at 16:60-64.) This results in raised “contact islands” having a protective repassivation layer. (*Id.*; *see also id.* at Figs. 13-14, 15:11-16:4.)

Claim 13 of the '631 Patent recites:

Radio Frequency Identification (RFID) *integrated circuit* (IC) comprising:

a plurality of contact islands raised from a surface of the IC and *separated from each other by at least one trench*, the at least one trench spanning at least a width of an adjacent contact island, and the contact islands covering substantially an entire surface area of the IC except for the at least one trench, wherein *each contact island includes*:

a nonconductive *repassivation layer* disposed on the surface of the IC;

a conductive *contact layer* disposed on and covering the repassivation layer and confined within a perimeter of the IC; and

an electrical coupling between the contact layer and at least one of a rectifier, a modulator, and a demodulator in the IC.

II. LEGAL PRINCIPLES

Claim construction is a question of law for the court. *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996). “The purpose of claim construction is to determine the meaning and scope of the patent claims asserted to be infringed.” *O2 Micro Int’l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008). “When the parties raise an actual dispute regarding the proper scope of the[] claims, the court, not the jury, must resolve the dispute.” *Id.* However, claim construction need only “resolve the controversy”; it is not “an obligatory exercise in redundancy” where no dispute exists. *Id.* at 1361; *Vivid Techs., Inc. v. Am. Sci & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999).

Claim terms are generally given the “ordinary and customary meaning” that they would have to a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312-13 (Fed. Cir. 2005) (en banc). The ordinary and customary meaning is not the meaning of the claim term in the abstract. *Id.* at 1321. Rather, it is “the meaning to the ordinary artisan after reading the entire patent.” *Id.*; see also *Trs. of Columbia U. v. Symantec Corp.*, 811 F.3d 1359, 1364 (Fed. Cir. 2016) (“The only meaning that matters in claim construction is the meaning in the context of the patent.”).

To determine the ordinary meaning, the court examines the claims, specification, and prosecution history of the patent, which form the “intrinsic evidence” for claim construction. *Phillips*, 415 F.3d at 1313; *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996). “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Phillips*, 415 F.3d at 1314. Additionally, “[d]ifferences among claims can also be a useful guide in understanding the meaning of particular claim terms.” *Id.* However, a person of ordinary skill in the art is “deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification.” *Id.* at 1313. The specification “is always highly relevant to the claim construction analysis” and usually “dispositive.” *Id.* at 1315 (quoting *Vitronics*, 90 F.3d at 1582). Nevertheless, it is

improper to limit the claimed invention to the preferred embodiments or to import limitations from the specification unless the patentee has demonstrated a clear intent to limit claim scope. *Martek Biosciences Corp. v. Nutrinova, Inc.*, 579 F.3d 1363, 1381 (Fed. Cir. 2009).

In addition to the claims and specification, the prosecution history may be used “to provide[] evidence of how the PTO and the inventor understood the patent.” *Phillips*, 415 F.3d at 1317. “Any explanation, elaboration, or qualification presented by the inventor during patent examination is relevant, for the role of claim construction is to ‘capture the scope of the actual invention’ that is disclosed, described and patented.” *Fenner Inv., Ltd. v. Celco P’ship*, 778 F.3d 1320, 1323 (Fed. Cir. 2015). Finally, a court may consider extrinsic evidence—such as dictionaries, inventor testimony, and expert opinion—if it is helpful. *Phillips*, 415 F.3d at 1319. However, extrinsic evidence “is unlikely to result in a reliable interpretation of patent claim scope unless considered in the context of the intrinsic evidence.” *Id.*

There are two exceptions to the ordinary meaning construction: “(1) when a patentee sets out a definition and acts as his own lexicographer,” and “(2) when the patentee disavows the full scope of a claim term either in the specification or during prosecution.” *Thorner v. Sony Comp. Entm’t Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012) (citing *Vitronics*, 90 F.3d at 1580). To act as a lexicographer, the patentee “must ‘clearly set forth a definition of the disputed claim term’ other than its plain and ordinary meaning.” *Id.* (quoting *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002)). To disavow claim scope, the specification or prosecution history must “make[] clear that the invention does not include a particular feature” even though the language of the claims “might be considered broad enough to encompass the feature in question.” *Id.* at 1366 (quoting *SciMed Life Sys., Inc. v. Adv. Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1341 (Fed. Cir. 2001)).

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III. CLAIM CONSTRUCTION

A. '302 Patent

Term	Impinj Construction	NXP Construction	Court Construction
"IC substrate"	"the portion of the semiconductor material on which the IC components are fabricated"	"structure on which the IC components are located"	structure that provides support for the IC components

Claim 1 of the '302 Patent recites an "IC substrate" on which a "first" and "second" antenna contact are "disposed on." Neither party provides a persuasive construction for this term. Impinj seeks to define the "substrate" as a "semiconductor material on which IC components are formed," but acknowledges that Figure 2 shows an IC "mounted on the strap substrate." ('302 Patent at 4:4-14.) Mounting is different from fabricating. NXP's construction, on the other hand, ties the substrate to the location of the IC, which allows it to encompass any material in any way connected to the IC. That is unsupported.

During the claim construction hearing, the Court proposed to construe this term as a "structure that provides support for the IC components"—the definition provided by NXP's expert, Dr. Subramanian—and the parties agreed. This construction resolves the parties' dispute and limits the substrate to immediately supporting materials. That construction is adopted here.

Term	Impinj Construction	NXP Construction	Court Construction
"substantially the same size"	Plain and ordinary meaning	Indefinite	Plain and ordinary meaning
"substantially larger"			
"substantially symmetric"			

Next, the parties dispute three terms using the word "substantially." NXP argues that each term is indefinite because a person of ordinary skill in the art would not understand how to draw the line between functions that meet these limitations and those that do not. The Court disagrees.

"[A] patent is invalid for indefiniteness if its claims, read in light of the specification

delineating the patents and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Inst., Inc.*, 572 U.S. 898, 909 (2014)). Terms like “substantially” and other “words of degree” are definite when the patent “provides some standard for measuring that degree.” *Enzo Biochem, Inc. v. Applera Corp.*, 599 F.3d 1325, 1332 (Fed. Cir. 2010); *see also Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). For example, where the patent provides examples, *Enzo*, 599 F.3d at 1332, or where the claims themselves recite functional limitations that determine the meaning of the terms, the claims are not indefinite. *See Tinnus Enters., LLC v. Telebrands Corp.*, 846 F.3d 1190 (Fed. Cir. 2018) (finding the term “substantially filled” not indefinite because the claims required the filled balloons to detach when shaken).

Here, both the claims and the specification provide sufficient boundaries. Namely, the claims require a channel “shaped to facilitate fluid flow.” Each of the “substantially” limitations also relate to channel shape—they require the channel to be wider at the ends, narrower in the middle, and substantially symmetric. The specification explains that these requirements achieve improved fluid flow by reducing turbulence and propagation velocity. (’302 Patent at Abstract.) Thus, just as in *Tinnus*, there is a functional limitation that determines whether the shape meets the claims. Moreover, the specification provides multiple examples of shapes that meet these claim requirements. (*See id.* at Figs. 12-13.) That also provides guidance. *See Apple Inc. v. Samsung Electronics Co., Ltd.*, 786 F.3d 983, 1003 (Fed. Cir. 2015) (“substantially centered” definite based on figure in the specification), *rev’d in part on other grounds*, 137 S. Ct. 429 (2016). To be sure, the specification does not explain how *much* velocity or turbulence needs to be reduced to meet the claims. But that was also true in *Tinnus*: the claims did not specify how much shaking was required for detachment. Thus, the claims provide enough “objective guidance” to render their scope reasonably certain.

Accordingly, the Court does not find the claims indefinite.

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Term	Impinj Construction	NXP Construction	Court Construction
“channel”	“a course of passage through which something may be moved or directed”	“passage with continuous side walls for directed fluid flow”	Plain and ordinary meaning

Next, NXP seeks to import a requirement for “continuous side walls” into the otherwise plain meaning of “channel.” NXP argues that the specification consistently shows continuous side walls and further requires it to “separate” two antenna contacts. NXP also claims that if the side walls were discontinuous—for example, if there was a hole in the middle—fluid flow would not be facilitated, and the purpose of the invention would not be achieved.

NXP does not persuade. Just because it is possible to create a channel that does not work for the stated purpose does not mean that all such variations must be excluded. For example, an hourglass-shaped channel with discontinuous walls or intersecting channels at the ends (similar to Figures 1306 or 1310) would facilitate fluid flow. (*See* Dkt. No. 77-2 (“Thompson Decl.”) ¶ 75 (fluid flow can be accomplished without continuous side walls).) Thus, NXP has not shown that continuous sidewalls are required by the invention. Although NXP is correct that embodiments in the specification have continuous sidewalls, that alone does not warrant importing limitations into the claims. *See Thorner*, 669 F.3d at 1366-67.

Accordingly, the Court construes “channel” according to its plain and ordinary meaning (which is consistent with Impinj’s interpretation).

B. ‘631 Patent

Term	Impinj Construction	NXP Construction	Court Construction
“covering”	Plain and ordinary meaning	“located over all of”	Plain and ordinary meaning

Turning to the ‘631 Patent, NXP seeks to construe “covering” as “located over all of.” That lacks support in the intrinsic evidence. First, the claims recite a contact layer “covering the repassivation layer” and contact islands “covering substantially an entire surface area of the IC except for the at least one trench.” (‘631 Patent at claim 13.) Substituting NXP’s construction would result in contact islands “located over all of substantially an entire surface area of the IC,”

which would render the “over all of” superfluous. Second, the specification expressly states the repassivation material “need not be fully removed from the trench,” while the contact layer is not deposited in the trench. (*Id.* at 15:53-16:4, claim 13.) Hence, the argument that the contact layer must cover all of the repassivation layer is meritless.

Accordingly, the Court adopts a plain and ordinary meaning construction.

Term	Impinj Construction	NXP Construction	Court Construction
“substantially an entire surface area of the IC except for the at least one trench”	Plain and ordinary meaning	Indefinite	Plain and ordinary meaning

NXP repeats its indefiniteness arguments for the “covering substantially an entire surface area of the IC” limitation. These are similar too—and rejected for the same reasons as—the arguments raised above. Namely, the specification provides enough guidance to the term through the use of examples in Figure 15, and exact precision is not required. *See Exmark Mfg. Co. Inc. v. Briggs & Stratton Prods. Grp., LLC*, 879 F.3d 1332, 1346 (Fed. Cir. 2018).

Accordingly, the claims are not indefinite on this basis.

Term 7	Impinj Construction	NXP Construction	Court Construction
“trench”	Plain and ordinary meaning	“cavity extending from the contact islands to the surface of the IC”	Plain and ordinary meaning

Next, NXP argues that the claimed “trench” must be a cavity “extending from the contact islands to the surface of the IC.” The argument is again meritless. The specification expressly states that the repassivation layer “need not be fully removed from the trench,” so the trench could extend from the surface of the contact layer—not the surface of the IC—to form the required separation between the contact layers of the contact islands. (’631 Patent at 16:2-4.)

Accordingly, the Court adopts the plain and ordinary meaning.

Term	Impinj Construction	NXP Construction	Court Construction
“is configured to protect the covered repassivation layer during etching”	“is positioned such that it could protect the covered repassivation layer during etching”	“is positioned such that it protects the covered repassivation layer during etching”	is made to protect the covered repassivation layer during etching

Last, NXP argues that a contact layer “configured to protect the repassivation layer during etching” must actually protect the repassivation layer during etching. Impinj responds that mere capability to do is permitted.

Generally, “configured to” in patent law means “made to,” “designed to,” or “adapted to,” or, more broadly, “capable of” or “suitable for.” *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1349 (Fed. Cir. 2012). The term generally does not require the “configured to” function to actually be performed. *See, e.g., Rothschild Connected Devices Innovations, LLC v. Coca-Cola Co.*, 813 F. Appx 557, 563-64 (Fed. Cir. 2020) (“configured to receive an identity of a user and an identifier of a beverage” does not “require that such communication actually occurs”). NXP cites *Typhoon Touch Techs., Inc. v. Dell, Inc.*, to argue otherwise, but that case does not support NXP’s claim. 659 F.3d 1376 (Fed. Cir. 2011). The claim term in *Typhoon Touch* was “memory for storing”—not memory “configured to” store—and the district court found that the memory must perform the stated function based on the specification. *Id.* at 1380-81. The Federal Circuit found “[n]o error of law or fact” in requiring “that the memory function is present in the device *in that the device is structured to store at least one data collection application.*” *Id.* at 1381. Thus, although the court affirmed the district court’s construction, it interpreted it as requiring structure, not that the function is actually performed.

Here, NXP’s construction could be interpreted as requiring etching to actually take place. No such requirement is found in the claims or specification. Thus, the Court interprets it to mean that *if* etching takes place, the contact layer would protect it to a reasonable degree. However, no such etching is actually required for infringement. The Court also rejects the parties’ mutual, but apparently unsupported, limitation of the mechanism of protection to “position.” The parties have not explained why a contact layer could not protect the repassivation layer through mechanisms other than positioning.

Accordingly, the Court construes “is configured to protect the covered repassivation layer during etching” as “is made to protect the covered repassivation layer during etching.”

IV. CONCLUSION

For the reasons stated herein, the Court finds adopts the following constructions.

Claim Term	Construction
“IC substrate”	structure that provides support for the IC components
“substantially the same size”	Plain and ordinary meaning (not indefinite)
“substantially larger”	
“substantially symmetric”	
“channel”	Plain and ordinary meaning (no requirement for continuous sidewalls)
“covering”	Plain and ordinary meaning
“substantially an entire surface area of the IC except for the at least one trench”	Plain and ordinary meaning
“trench”	Plain and ordinary meaning
“is configured to protect the covered repassivation layer during etching”	“is suitable for protecting the covered repassivation layer during etching”

IT IS SO ORDERED.

Dated: September 16, 2021



YVONNE GONZALEZ ROGERS
UNITED STATES DISTRICT COURT JUDGE